**System**

**JJI-Joist range**
JJI-Joists are available in a comprehensive range of sizes, designed specifically for the UK market.

**JJI-Joist flange sizes**

<table>
<thead>
<tr>
<th>Flange Size</th>
<th>A+</th>
<th>B+</th>
<th>C</th>
<th>D</th>
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<tbody>
<tr>
<td>47mm</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td></td>
</tr>
<tr>
<td>63mm</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td></td>
</tr>
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<td>72mm</td>
<td>✔</td>
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<tr>
<td>97mm</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
</tbody>
</table>

**Site storage and restrictions**

**JJI-Joist site storage**

- DO NOT stack building materials on unbraced joists
- DO NOT use non-approved hangers
- DO NOT cut or notch flanges
- DO NOT walk on joists until proper bracing is in place
- DO NOT cut holes too close to each other – see hole installation guide
- DO NOT bevelling on joists past the inside face of the wall
- DO NOT support the joist on the web
- DO NOT over-cut web holes
- DO NOT split the flange, ensure proper toe nailing
- DO NOT stack building materials on unbraced joists
- DO NOT use non-approved hangers
- DO NOT cut or notch flanges

**Metalwork**

James Jones recommend using Cullen and Simpson Strong Tie metalwork.

**JJ-Beam product range**
JJ-Beam is supplied as part of the JJI-Joist system. It is available in depths that match the JJI-Joist product range and three standard widths. See table below for standard range.

**Intermediate width can be achieved by fixing multiple settings together with suitably specified fixings.**

**JJ-LVL product range**
JJ-LVL-Beam and JJ-LVL-Rim is available in depths to suit the JJI-Joist product range and four standard widths depending on the grade. See table below for our standard range.

**Intermediate width can be achieved by fixing multiple settings together with suitably specified fixings.**

**Attention! The following conditions are not allowed**

- DO NOT hammer on the web or flange
- DO NOT bevelling on joists past the inside face of the wall
- DO NOT support the joist on the web
- DO NOT walk on joists until proper bracing is in place
- DO NOT stack building materials on unbraced joists
- DO NOT use non-approved hangers
- DO NOT cut or notch flanges

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Temporary erection bracing notes

The builder is responsible for identifying and minimising the risks involved in erecting JJI-joists to ensure that the health and safety of all workers is maintained. Builders should be aware of the health and safety responsibilities imposed on them by the Construction (Design and Management) Regulations 2015. Proper erection procedures and bracing are vital to the safe construction of JJI-joists floors. The following notes may assist builders in preparing a safety assessment.

1. Do not allow workers to walk on unbraced joists.
2. Do not store building materials on unbraced joists.
3. JJI-joists should be erected straight and vertical. The maximum deviation from horizontal should not exceed 10mm and the maximum deviation from the vertical should not exceed 2mm.
4. JJI-joists are unstable until fully braced. Bracing includes: longitudinal binders, diagonal bracing, stability blocking, rim joist/rim boards.
5. All longitudinal binders, diagonal braces, stability blocks, and hangers should be completely installed and fully nailed as detailed.

Installation guidelines

This diagram indicates temporary erection bracing only. It is applicable to both timber frame and masonry construction.

Stability blocking notes

- Use timber blocks or JJI-joist blocking pieces.
- Timber blocks to be minimum 38 x 125mm cut squarely and accurately to maintain joist spacing. Fasten with minimum 2 no. 3.35 x 65mm nails.
- Stability blocks need to be fixed to 3 joists and cover a minimum distance of 1200mm.
- Timber blocks in the diagonally braced systems are required in each run of joists and at cantilever supports.
- When joists butt on an interior support, block both sets of joists.
- Additional braced and blocked systems should be provided at 12m spacing in long joist runs.

Example of JJI-joist floor system

The full library of construction details can be found in the JJI-joist Technical Manual.
**F3** WALL AT 90° TO JJI-JOISTS

The floor designer is responsible for ensuring the floor design is adequate to support the wall.

**F4** NON-LOAD BEARING WALL PARALLEL TO JJI-JOISTS

Wall sole plate nailed to each nogging/dwang.

38 x 75mm nogging/dwang or JJI-C flange at maximum 600 c/c attached with 2 no. 3.35 x 65mm nails skew nailed at each end, alternately use approved clips.

The floor designer is responsible for ensuring the floor design is adequate to support the wall.

**F5** INTERMEDIATE BEARING WITH LOAD BEARING WALL ABOVE

Load bearing wall aligned under wall above.

**F6** TERMINATING JJI-JOIST ON WALL

Either blockwork or JJI-Joist blocking is required.

Suitable detailing required if used on an external wall.

**F7** JJI-JOIST BEARING IN BLOCK WALL

Minimum bearing 100mm.

Construct blockwork around joint and fill all voids with web fillers, mortar and joint with mastic sealant. Alternative proprietary systems may be used if approved by JJ&S.

**F8** MASONRY WALL RESTRAINT JJI-JOIST PARALLEL DETAIL 1

Refer to approved connector manufacturer’s guidelines for installation instructions.

Ensure the minimum nails fixed through hanger into incoming joint. Backer block fixed to BOTH SIDES of principle joist. Refer to detail F21

**F9** MASONRY WALL RESTRAINT JJI-JOIST PARALLEL DETAIL 2

Do not notch the JJI-Joist flange under any circumstances.

**F10** WALL RESTRAINT, BLOCK WALL HANGER SUPPORT

Web fillers may be required. Refer to joint design and/or approved connector manufacturer’s guidelines.

**F11** JJI-JOIST BEARING ON EXTERNAL WALL

Additional blocking may be required to Engineer’s specification, to improve sound, structural performance and fixing.

Only applicable where a maximum of one storey is built above.

**F12** JJI-JOIST BEARING ON EXTERNAL WALL

Additional blocking may be required to Engineer’s specification, to improve sound, structural performance and fixing.

Only applicable where a maximum of one storey is built above.

**F13** JJI-JOIST PARALLEL TO EXTERNAL WALL

Approved face or top fix hanger secured through specified nail holes (refer to approved connector manufacturer’s guidelines).

Only applicable where a maximum of one storey is built above.

**F14** SINGLE JJI-JOIST TO JJI-JOIST

Ensure the minimum nails fixed through hanger into incoming joint. Backer block fixed to BOTH SIDES of principle joist. Refer to detail F21

Restraint straps are the responsibility of the building designer.
**F15 - SINGLE JJI-JOIST TO MULTIPLE JJI-JOIST**

Ensure the minimum 4 no. nails fixed through hanger into incoming joist. Filler and backer blocks should be kiln-dried timber, structural grade plywood or OSB/3 to approved connector manufacturer’s guidelines.

**F16 - SINGLE JJI-JOIST TO JJI-JOIST (LIGHT LOAD)**

Approved metalwork secured through all nail holes (refer to approved connector manufacturer’s guidelines).

**F17 - MULTIPLE JJI-JOIST TO MULTIPLE JJI-JOIST**

Ensure the minimum 4 no. nails fixed through hanger into incoming joist.

**F18 - JJI-JOIST TO ENGINEERED TIMBER**

Ensure the minimum 4 no. nails fixed through hanger into incoming joist.

**F19 - FILLER BLOCK – DOUBLE OR TREBLE JJI-JOIST**

Example Nail driven over

See F21 for filler block information

Provide filler blocks at all ends and bearings of joist and at points of incoming loads (see F15). Alternatively provide continuous filler block when repeated loads are applied (see detail F40).

**F20 - FILLER AND BACKER BLOCK TABLE**

Refer to details provided by the JJI-Joist supplier for required locations of filler and backer blocks. Where a continuous filler block is used (see detail F40).

**F21 - FILLER AND BACKER BLOCK NAILING DETAIL**

Denotes nails from rear face

Denotes nails from front face

All filler and backer blocks for face fix hangers to be fixed tight to bottom flange with a minimum 3mm gap at the top.

Backer blocks for top fix hangers to be fixed tight to the top flange with a minimum 3mm gap at the top.

Minimum nail diameter 3.1mm

Web stiffeners are required where indicated on drawings provided by the JJI-Joist supplier.

100mm wide plywood, OSB/3 or kiln dried timber stiffener block fitted to both sides.

**F22 - WEB STIFFENER**

Web stiffeners are required where indicated on drawings provided by the JJI-Joist supplier.

**F23 - LOAD BEARING WALL PARALLEL TO JJI-JOIST RUN**

Fix sole plate of wall to joist at centres specified by building designer

Add JJI-Joist or Glulam/LVL parallel with joint run under load bearing wall

Web stiffeners are required where indicated on drawings provided by the JJI-Joist supplier.

100mm wide plywood, OSB/3 or kiln dried timber stiffener block fitted to both sides.

**F24 - CANTILEVER**

Cantilever closer required

Back span of cantilever must be at least 3 times the cantilever length.

1.2m maximum cantilever length

Web stiffeners are required where indicated on drawings provided by the JJI-Joist supplier.

100mm wide plywood, OSB/3 or kiln dried timber stiffener block fitted to both sides.

**F25 - NEWEL POST TO JJI-JOIST TRIMMER**

Backer block fixed to loaded side of principal JJI-Joist.

Refer to detail F21

Cut and recess newel to fit over timber to reference manufacturer’s details

Approved face fix hangers fixed through all nail holes.

Refer to approved metalwork supplier’s literature for further information.

**F26 - JJI-JOIST TO STEEL BEAM FACE FIXING**

Continuous timber packing fixed to building designer’s detail

Beam soffit level

Ensure the minimum 4 no. nails fixed through hanger into incoming joist.

Approved face fix hangers fixed through all nail holes.

Refer to approved metalwork supplier’s literature for further information.
**Floor layout**

**Floor layout**

**Job/Layout details**
- Floor layout details including; house type, design revision, design date, site address, layout scale

**Metalwork**
- Specific metalwork images of the hangers and associated ironmongery used within the floor layout

**Fixing details**
- Examples of how to connect JJI-joists, Glulam, LVL, blocking pieces, restraint straps etc

**Notes**
- Floor layout design notes including; joint spacing, design code and loadings, restraint strap responsibilities

**BOQ**
- Complete breakdown of floor layout materials showing quantities, weights, ID marks, material descriptions

**Carbon capture**
- Details the amount of carbon dioxide (CO₂) captured within the JJI-Joists in the floor layout (optional)

**Safety hatch system**
- System component description, codes and dimensions (optional)

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**Joist Requirements**

<table>
<thead>
<tr>
<th>Mark</th>
<th>Type</th>
<th>Size</th>
<th>Span</th>
<th>Ply</th>
<th>Weight(kg)</th>
<th>Qty</th>
<th>Makeup</th>
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<tr>
<td>J1</td>
<td>JJI220A+-24</td>
<td>47x220</td>
<td>1150</td>
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<td>3.10</td>
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**Metalwork Requirements**

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<td>A</td>
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<td>Cullen HV-GR 220-2</td>
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**Extra Timber Requirements**

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<th>Type</th>
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<tr>
<td>Perimeter Noggin</td>
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<td>Partition Noggin</td>
<td>CLS</td>
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<tr>
<td>Strap Noggin</td>
<td>CLS</td>
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**Decking Requirements**

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<tr>
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<td>22mm Egger PCX</td>
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<tr>
<td>D4 Glue</td>
<td>1L</td>
<td>6</td>
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</table>

**Construction Notes**

- If in doubt ASK.
- Do not scale this drawing.
- Designed in accordance with BS 5268: Part 2.
- Plasterboard specification as per manufacturer’s guidelines.
- A water cylinder/thermal store load provision of 150kg has been allowed unless noted otherwise.
- JJI-Joists at 400mm centres unless noted otherwise.
- Loading: 0.500kN/m² Dead Load, 1.500kN/m² Imposed Load.
- JJI-Joists maximum deflection limit = Floors: span x 0.003 or 12mm
- This layout is for an Intermediate Floor.
- Multiple JJ-Beam members fixed in accordance with manufacturer’s guidelines.
- Restraint Straps are the responsibility of the Building Designer.
- Any CO₂e figures reported in this layout apply to the JJI-Joists only. No account has been made for any other products.
RESTRAINT STRAPS ARE THE RESPONSIBILITY OF THE BUILDING DESIGNER

F30 JJ-JOIST TO STEEL BEAM/MASONRY

- 67mm of cured masonry before hanger loaded, see approved connector manufacturer’s H&S guidelines
- Brick course may be required where steel is shallower than incoming joist
- Approved masonry hanger built into bed joint
- Do not fix joist to steel lintels unless approved by lintel manufacturer
- Bottom of hanger must rest against bottom flange of steel beam
- Refer to approved metalwork supplier’s literature for further information

F31 JJ-JOIST TO STEEL BEAM TOP FIXING

- Timber packing fixed to building designer’s detail
- Timber packing piece fitted 2mm proud of inside face of steel flange
- Approved top fix hanger secured through specified nail holes
- Bottom of flange must rest against bottom flange of steel beam
- Do not fix joist to steel lintels unless approved by lintel manufacturer
- Refer to approved metalwork supplier’s literature for further information

F32 JJ-JOIST BEARING ON PARTY WALL

- Minimum thickness of Glulam/LVL, embossed to be dictated by fire requirements
- Timber/Plywood/Rockwool void fillers

F33 JJ-JOIST PARALLEL TO PARTY WALL

- Overall minimum thickness of solid rimboard and blocking to be 76mm

F34 INDICATIVE DISPROPORTIONATE COLLAPSE JJ-JOISTS AT 90˚ TO WALL

- Specification to Engineer’s detail

F35 INDICATIVE DISPROPORTIONATE COLLAPSE JJ-JOIST PARALLEL TO WALL

- Specification to Engineer’s detail

F36 JJ-JOIST PARALLEL TO EXTERNAL WALL

- Additional blocking may be required to provide adequate structural performance, to engineer’s detail

F37 SPECIFICATION TO ENGINEER’S DETAIL

F38 JJ-JOIST PARALLEL TO EXTERNAL WALL

F39 ENHANCED HANGER UPLIFT

- All triangular optional nail holes filled to provide enhanced uplift value (see hanger manufacturer’s literature for further information)

F40 CONTINUOUS FILLER BLOCKS

- A continuous filler block should be utilised with multiple incoming loads
- A continuous backer block could also be provided
- Where continuous filler block is used, fix with 2 rows of nails at 300mm centres from both faces

F41 BACKER FREE JJ-JOIST TO JJ-JOIST

- Ensure minimum 4 nos. nails fixed through hanger into incoming joist

F42 FIXING DOUBLE OR TREBLE JJ-JOISTS

- Refer to approved metalwork supplier’s technical literature for specification and installation guidelines

F43 Floor details

F44 Floor details

F45 MASONRY RESTRAINT HANGER DETAIL 1

- Nogging/dwang (min 38 x 45mm) securely fixed with 2.35 x 65mm skew nailing or approved clip

F46 MASONRY RESTRAINT HANGER DETAIL 1

- Refer to approved metalwork supplier’s technical literature for specification and installation guidelines

RESTRAINT STRAPS ARE THE RESPONSIBILITY OF THE BUILDING DESIGNER
F46 MASONRY REstraint HANGER DETAIL 2
Nogging/dwang (max 38 x 45mm) securely fixed with 3.5 x 65mm skew nailing or approved clip

F47 SST END CAP AIRTIGHTNESS DETAIL
Nogging/dwang (max 38 x 45mm) securely fixed with 3.5 x 65mm skew nailing or approved clip

F48 ITW GRIPPER AIRTIGHTNESS DETAIL
Nogging/dwang (max 38 x 45mm) securely fixed with 3.5 x 65mm skew nailing or approved clip

F49 JJI-JOIST BEARING ON EXTERNAL WALL LOW LOAD
18mm external grade structural plywood
JJI-Joist, Glulam/LVL blocking offsets
Web of blocking material must be fully supported
Alternatively use Glulam/LVL blocking in lieu of JJI-Joists
JJI-Joist blocking offsets can be of any joist width

F50 JJI-JOIST PARALLEL TO EXTERNAL WALL LOW LOAD
18mm external grade structural plywood
JJI-Joist, Glulam/LVL blocking offsets
Web of blocking material must be fully supported

F51 JJI-JOIST PARALLEL DETAIL - SPRoCKETS
Glulam/LVL or other engineered timber
JJI-Joist blocking sprockets

RESTRAINT STRAPS ARE THE RESPONSIBILITY OF THE BUILDING DESIGNER

Floor details

Service holes

The table below gives the minimum required distance, L (mm), from inside face of support to nearest edge of hole for uniformly loaded, simply supported joists. See table notes.

<table>
<thead>
<tr>
<th>Joist Type</th>
<th>Joist Size (mm)</th>
<th>200</th>
<th>250</th>
<th>300</th>
<th>350</th>
<th>400</th>
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<td>410</td>
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</table>

1. This table has been calculated for joists in intermediate domestic floors $k=0.75kN/m^2$, $Q_k=1.5kN/m^2$, $Q_2=5kN/m^2$ at 600mm centres.
2. Where more than one hole is to be cut, the minimum spacing between holes must be 2 times the width of the largest hole.
3. The rectangular hole width b should not exceed 1.5 times the diameter of the largest hole.
4. Cut all holes carefully, do not overcut and do not cut flanges.
5. Where holes are required in rim and header joists of timber frame construction refer to the building designer.

For holes outside this guidance please contact your distributor.

Alternative solutions - reinforcing plates

For Glulam and LVL holes contact your distributor.
Fixing Detail A - 2 ply JJ-Beam/JJ-LVL Beam - 2 rows of 3.1 x 75mm nails @300mm centres

Notes
1. Capacities for nail details are based on 3.1mm diameter power driven nails (75mm long for 38/39mm thick plies and 90mm long for 45mm plies), hammer driven nails up to 4.5mm diameter may be used
2. Fixing details can be advised by Distributor or noted on layout drawing

Nails in two ply members to be fixed in two rows 45mm in from the top and bottom edge, driven from alternate sides. The minimum end distance should be 90mm.

Fixing Detail B - 3 ply JJ-Beam/JJ-LVL Beam - 3 rows of 3.1 x 75mm nails @300mm centres

Notes
1. Capacities for nail details are based on 3.1mm diameter power driven nails (75mm long for 38/39mm thick plies and 90mm long for 45mm plies), hammer driven nails up to 4.5mm diameter may be used
2. Fixing details can be advised by Distributor or noted on layout drawing

Nails in three ply members to be fixed in two rows 45mm in from the top and bottom edge and one row along the centre line driven through each outer ply into the central one. Note that nails from any one face should be at the specified centres with the nails from the opposite face offset by half the centres distance. The minimum end distance should be 90mm.

Fixing Detail C - Multiply JJ-Beam/JJ-LVL Beam - 2 rows of M12 bolts @600 centres

Notes
1. 38mm diameter x 3mm thick washers are required under each head and nut on M12 bolts. Bolts to be minimum 4.6 grade
2. Bolt length to be no less than the overall width of beam + 18mm, e.g. a 90mm JJ-Beam and JJ-Rim would require a 108mm bolt
3. Fixing details can be advised by Distributor or noted on layout drawing

Bolts should be fixed in two rows 65mm in from the top and bottom edge, bolts should be drilled at Ø12mm and bolts tapped into place. The minimum end distance should be 48mm.

Fixing Detail D - Multiply JJ-Beam/JJ-LVL Beam - 2 rows of M12 bolts @400 centres

Notes
1. 38mm diameter x 3mm thick washers are required under each head and nut on M12 bolts. Bolts to be minimum 4.6 grade
2. Bolt length to be no less than the overall width of beam + 18mm, e.g. a 90mm JJ-Beam and JJ-Rim would require a 108mm bolt
3. Fixing details can be advised by Distributor or noted on layout drawing

Bolts should be fixed in two rows 65mm in from the top and bottom edge, bolts should be drilled at Ø12mm and bolts tapped into place. The minimum end distance should be 48mm.

Fixing Detail E - Multiply JJ-Beam/JJ-LVL Beam - 2 rows of M12 bolts @300 centres

Notes
1. 38mm diameter x 3mm thick washers are required under each head and nut on M12 bolts. Bolts to be minimum 4.6 grade
2. Bolt length to be no less than the overall width of beam + 18mm, e.g. a 90mm JJ-Beam and JJ-Rim would require a 108mm bolt
3. Fixing details can be advised by Distributor or noted on layout drawing

Bolts should be fixed in two rows 65mm in from the top and bottom edge, bolts should be drilled at Ø12mm and bolts tapped into place. The minimum end distance should be 48mm.

Fixing Detail F - 3 ply JJ-Beam/JJ-LVL Beam - 3 rows of 3.1 mm nails @90mm spacing

Notes
1. Capacities for nail details are based on 3.1mm diameter power driven nails (75mm long for 38/39mm thick plies and 90mm long for 45mm plies), hammer driven nails up to 4.5mm diameter may be used
2. Fixing details can be advised by Distributor or noted on layout drawing

Nails in three ply members to be fixed in 2 rows 45mm in from the top and bottom edge, and one row along the centre line driven through each outer ply into the central one.
Notes
1. 38mm diameter x 3mm thick washers are required under each head and nut on M12 bolts. Bolts to be minimum 4.6 grade.
2. Bolt length to be no less than the overall width of beam + 18mm, e.g. a 90mm JJ-Beam would require a 108mm bolt.
3. Fixing details can be advised by Distributor or noted on layout drawing.

Bolts should be fixed in two rows 65mm in from the top and bottom edge, bolts should be drilled at Ø12mm and bolts tapped into place.

For further information on JJ-Beam/JJ-LVL Beam fixings, please refer to our Technical Manual by clicking the QR code link below.
PRODUCT SUPPORT

Cullen ITW (Metalwork) 01592 777570

Simpson StrongTie (Metalwork) 01827 255600

Norbord (Chipboard deck) 01463 792424

Egger (Chipboard deck) 01434 60219

If in doubt, phone your local Pasquill branch

Distributor details

Greshop Industrial Estate, Forres, Moray. IV36 2GW. 01309 671111
www.jamesjones.co.uk